

**CORRECTIVE ACTION MANAGEMENT PLAN**

**NAVAL SUPPORT ACTIVITY MID-SOUTH  
MILLINGTON, TENNESSEE**

**Revision: 5**

**Comprehensive Long-Term Environmental Action Navy**

**Contract Number N62467-89-D-0318**

**CTOs — 0094/0146**

**Prepared for:**



**Department of the Navy  
Southern Division  
Naval Facilities Engineering Command  
North Charleston, South Carolina**

**Prepared by:**



**EnSafe Inc.  
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**December 20, 2005**

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**The Contractor, EnSafe Inc., hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0318 is complete, accurate, and complies with all requirements of the contract.**

**Date:** December 20, 2005  
**Signature:**   
**Name:** John Stedman, Jr.  
**Title:** Task Order Manager

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## **1.0 INTRODUCTION**

This Corrective Action Management Plan (CAMP) provides the overall management structure for implementing the Corrective Action Program at Naval Support Activity (NSA) Mid-South (formerly Naval Air Station [NAS] Memphis), Millington, Tennessee, under the Resource Conservation and Recovery Act (RCRA). It was originally approved by the U.S. Environmental Protection Agency (USEPA) Region 4 on June 29, 1993, and revised in November 1994, July 1996, and March and October 1997 to address changing priorities resulting from the Base Closure and Realignment Act of 1990 (BRAC). It is being revised now to reflect the current status of the project. The plan: (1) groups known solid waste management units (SWMUs), (2) summarizes the investigations and corrective actions taken at each SWMU, (3) summarizes the strategy for implementing the Corrective Action Program, and (4) describes current and future monitoring and corrective actions at each SWMU.

NSA Mid-South received RCRA Permit No. TN2-170-022-600 from USEPA Region 4 in September 1986. The Hazardous and Solid Waste Amendments (HSWA) portion of the permit (HSWA-TN002) required NSA Mid-South to conduct a RCRA Facility Assessment (RFA) to identify and characterize all active and inactive SWMUs on the facility. The Navy retained Engineering, Design and Geosciences Group, Inc. (EDGe) in December 1986 to conduct the RFA to evaluate SWMUs known, suspected, or presumed to have releases of hazardous constituents. EDGe prepared the Draft RFA report and submitted it in April 1987. The report identified 58 potential SWMUs and recommended 34 for additional study. Since 1987, eight more sites have been added and a formerly identified site has been divided into two sites, bringing the total number of SWMUs to 67. On September 24, 1996, the Tennessee Department of Environment and Conservation (TDEC) issued a permit modification (Installation Identification Number TN2 17 002 2600; Permit Number TNHW-094) to add the new SWMUs and Area of Concern (AOC) A, the Northside fluvial deposits groundwater. Thus, there are currently 67 SWMUs and one AOC listed in the modified permit.

EDGe submitted a revised Draft Final RFA in July 1989 based on USEPA's decision the previous year that the report was inadequate. In a letter dated February 22, 1990, USEPA established an official SWMU list and instructed the Naval Facilities Engineering Command Southern Division (EFD SOUTH) to proceed with an RCRA Facility Investigation (RFI) Work Plan. EFD SOUTH prepared and submitted a Draft-Final RFI Work Plan in July 1990 and received comments on the plan from USEPA and TDEC in November 1991. EnSafe/Allen & Hoshall (E/A&H) responded to these comments, prepared a Comprehensive RFI Work Plan (E/A&H, 1994), and prepared site investigation plans (SIPs) for each group of SWMUs. Upon approval of the SIPs for each

SWMU group, the U.S. Geological Survey (USGS) and/or EnSafe (formerly E/A&H) implemented the fieldwork.

As a result of BRAC, a portion of the former NAS Memphis Northside (primarily the airfield and associated buildings) were closed and transferred to the City of Millington, while the remainder of the Northside and all of the Southside were retained. Under the realignment, training operations moved to NAS Pensacola at the end of 1996, NAS Memphis was renamed Naval Support Activity (NSA) Mid-South, and Navy Bureau of Personnel (BUPERS) operations moved from Washington, D.C., to NSA Mid-South in 1997.

The majority of the site investigations (Confirmatory Sampling Investigation [CSI] or CSIs and RFIs) were conducted between 1995 and 2000. Subsequent reports, documenting the investigation findings, evaluating risk, and recommending the next course of action, were distributed to the BRAC Cleanup Team (BCT) for review. Corrective Measures Studies (CMS) were recommended for several sites and have been completed. These sites are currently undergoing Corrective Measures Implementation (CMI) or Interim Measures (IM). The implementation strategy is outlined in Section 2.0 of this report.

Regarding the 68 total SWMUs and AOC (Table 1-1), the following actions have been completed or are in progress:

- Nineteen have been approved for no further action (NFA) and are eligible for unrestricted site re-use. However, if the SWMU is located on the Northside, then the SWMU's fluvial deposits groundwater is being investigated with AOC A and will have fluvial deposits groundwater restrictions. The NFA SWMUs include:
  - SWMUs 1, 4, 6, 11, 16, 26, 31, 36, 38, 40, 42, 44, 50, 51, 52, 53, 62, 66, and 67
- Twenty-eight have been proposed for NFA and may eligible for unrestricted site re-use. The Statements of Basis (SB) are currently being prepared for these SWMUs, and following a public comment period, the NFA remedy may become final. However, if the SWMU is located on the Northside, then the fluvial deposits groundwater will have restrictions. The proposed NFA SWMUs include:
  - SWMUs 3, 12, 13, 19, 23, 24, 25, 28, 29, 30, 32, 33, 34, 35, 37, 45, 47, 48, 49, 54, 55, 56, 57, 58, 59, 61, 63, and 65

- Seven have been approved for CMI via land-use controls (LUC). The LUCs for each SWMU are detailed in the SWMU's SB. These 7 are:
  - SWMUs 8, 10, 18, 21, 27, 60, and 64
- Eight have been proposed for CMI via LUCs. The SBs are currently being prepared for these SWMUs, and following a public comment period, the remedy may become final. These 8 are:
  - SWMUs 5, 7, 9, 17, 20, 41, 43, and 46
- Four are currently undergoing a CMI via IM or Monitored Natural Attenuation (MNA) monitoring. Those SWMUs are 2, 14, 39, and AOC A.
- Two are currently undergoing an RFI interim measures: SWMUs 15 and 22.

**Table 1-1**  
**Solid Waste Management Units**

<b>SWMU No.</b>	<b>Description</b>	<b>Action Required</b>	<b>Funding</b>
1	Fire Department Drill Area	NFA	BRAC
2	Southside Landfill	CMI (MNA)	ERNA
3	Building N-121 Plating Shop Dry Well	NFA*	ERNA
4	Building N-121 Plating Shop Storm Sewer and Drainage Ditch	NFA	BRAC
5	Aircraft Fire Fighting Training Area	CMI (LUC*)	BRAC
6	Building N-126 Battery Shop Storm Sewer and Ditch	NFA	BRAC
7	Building N-126 Plating Shop Dry Well	CMI (LUC*)	BRAC
8	Cemetery Disposal Area	CMI (LUC)	BRAC
9	Sewage Lagoons	CMI (LUC*)	ERNA
10	Northside Landfill (Eastern Portion)	CMI (LUC)	BRAC
11	Oiled Dirt Roads	NFA	BRAC
12	Galley Disposal	NFA*	ERNA
13	Building 499 Grease Pit	NFA*	ERNA
14	Building S-140 Site and Seventh Avenue Ditch	CMI (IM)	ERNA
15	N-94 Underground Tank Farm	RFI (IM)	BRAC
16	N-94 Above-Ground Waste Tanks	NFA	BRAC
17	S-9 Underground Waste Tank	CMI (LUC*)	ERNA
18	N-112 Underground Waste Tank	CMI (LUC)	BRAC
19	N-757 Underground Waste Tank (formerly 341 and 1648 UWT)	NFA*	ERNA
20	1594 Underground Waste Tank	CMI (LUC*)	ERNA

**Table 1-1  
Solid Waste Management Units**

<b>SWMU No.</b>	<b>Description</b>	<b>Action Required</b>	<b>Funding</b>
21	N-10 Underground Waste Tank	CMI (LUC)	BRAC
22	S-75 Underground Fuel Tanks	RFI (IM)	ERNA
23	S-8 Underground Fuel Tank	NFA*	ERNA
24	N-114 Auto Hobby Shop Waste Oil Tanks	NFA*	ERNA
25	Big Creek Landfill	NFA*	ERNA
26	N-102 Battery Acid Treatment (Underground Tank Only)	NFA	BRAC
27	Northside Sewage Treatment Plant	CMI (LUC)	BRAC
28	Southside Sewage Treatment Plant	NFA*	ERNA
29	Lakehouse Sewage Treatment Plant	NFA*	BRAC
30	Park Field Waste Treatment Tank	NFA*	ERNA
31	Aircraft Wash Rack at Fourth Street	NFA	BRAC
32	N-7 Aircraft Wash Rack	NFA*	BRAC
33	H-10 Incinerator	NFA*	ERNA
34	H-109 Incinerator	NFA*	ERNA
5	1579 Incinerator	NFA*	ERNA
36	Northside Sewage Treatment Plant Incinerator	NFA	BRAC
37	Southside Sewage Treatment Plant Incinerator	NFA*	ERNA
38	Miscellaneous Drainage Ditches	NFA	BRAC
39	S-74 PCB Storage Area	CMI (IM)	ERNA
40	Salvage Yard No. 1	NFA	BRAC
41	Salvage Yard No. 2	CMI (LUC*)	ERNA
42	N-12 Interim Hazardous Waste Storage Area	NFA	BRAC
43	Hazardous Waste Accumulation Point at Building S-176	CMI (LUC*)	ERNA
44	Hazardous Waste Accumulation Point at Building N-102	NFA	BRAC
45	Hazardous Waste Accumulation Point at Building S-142	NFA*	ERNA
46	Hazardous Waste Accumulation Point at Building S-140	CMI (LUC*)	ERNA
47	Hazardous Waste Accumulation Point at Building 344	NFA*	ERNA
48	Hazardous Waste Accumulation Point at Building S-9	NFA*	ERNA
49	Hazardous Waste Accumulation Point at Building N-757	NFA*	ERNA
50	Hazardous Waste Accumulation Point at Building N-126, MAG-42	NFA	BRAC
51	Hazardous Waste Accumulation Point at Building N-126, VR-60	NFA	BRAC
52	Hazardous Waste Accumulation Point at Building N-126, VP-67	NFA	BRAC
53	Hazardous Waste Accumulation Point at Building N-126, AIMD	NFA	BRAC
54	Hazardous Waste Accumulation Point at Dental Clinic	NFA*	ERNA
55	Hazardous Waste Accumulation Point at Medical Clinic	NFA*	ERNA
56	Hazardous Waste Accumulation Point at Building 352	NFA*	ERNA
57	Hazardous Waste Accumulation Point at Building S-183	NFA*	ERNA
58	Hazardous Waste Accumulation Point at Building S-360	NFA*	ERNA

**Table 1-1  
Solid Waste Management Units**

<b>SWMU N .</b>	<b>Description</b>	<b>Action Required</b>	<b>Funding</b>
59	Pesticide Storage Facility (Old Pesticide Shop)	NFA*	ERNA
60	Northside Landfill (Western Portion)	CMI (LUC)	BRAC
61	Building N-26 (Former Printing Shop)	NFA*	ERNA
62	M-21 Arresting Gear Drainage Area	NFA	BRAC
63	Underground Waste Tank S-75N	NFA*	ERNA
64	Materials Storage Area N-16	CMI (LUC)	BRAC
65	Building S-362 (Training Mockup Site)	NFA*	ERNA
66	Radar Facility Dump	NFA	BRAC
67	Horse Pasture Dump	NFA	BRAC
AOC	Northside Fluvial Deposits Groundwater	CMI (IM)	BRAC

**Notes:**

\* The SBs are currently being prepared for these SWMUs, and following a public comment period, the remedy may become final.

NFA — No Further Action  
CMI — Corrective Measures Implementation  
MNA — Monitored Natural Attenuation  
LUC — Land-Use Control  
BRAC — Base Realignment and Closure  
ERNA — Environmental Restoration Navy Account  
IM — Interim Measures



## **2.0 OBJECTIVES**

A CAMP outlines the strategy for achieving the objectives of a RCRA Corrective Action Program. The Corrective Action Program evaluates the potential for hazardous waste and/or constituent releases to the environment from SWMUs at a facility and implements corrective actions when needed. The program was extended under HSWA to cover all past waste management practices at RCRA facilities. It applies to all operating, closed, or closing RCRA facilities and consists of the RFA, the RFI, the CMS and remedy selection, and the CMI.

The NSA Mid-South CAMP describes the strategy for verifying and characterizing suspected releases of hazardous waste or hazardous constituents to the environment and the corrective actions applied. This CAMP has been prepared in accordance with the requirements of the HSWA portion (HSWA-TN002) of the NSA Mid-South RCRA permit and applicable regulations.

Implementing this strategy involves accomplishing the following objectives:

- Conducting CSIs or verification sampling at applicable SWMUs to confirm whether releases have occurred and, if so, whether RFI characterization is needed.
- Conducting RFIs at applicable SWMUs and AOCs to adequately determine the magnitude and extent of releases to all potentially affected media at each SWMU.
- Implementing Voluntary Corrective Actions (VCA) or IMs at applicable SWMUs to remove immediate threats to human health or the environment, facilitate realignment or property transfer activities, etc., and, if necessary, conducting a followup CSI or RFI characterization at these SWMUs.
- Defining the hazards and risks to human health and the environment associated with the confirmed hazardous waste or constituent releases.
- Conducting a CMS to identify and evaluate potential corrective measures for future response actions at RFI SWMUs where the need for such action has been identified.
- Implementing corrective actions to remediate SWMUs.
- Complying with former President Clinton's "fast-track cleanup initiative" for closing bases to facilitate conveyance of property to communities for redevelopment and economic recovery.

The strategy for achieving these objectives is based on the following assumptions:

- A contractor designated by the Navy will perform the fieldwork at the RFI SWMUs. The contractor will conduct the fieldwork at the SWMUs and will be responsible for preparing and submitting deliverables for their respective SWMUs.
- IM and CMI activities for each group, such as work plan development, field implementation, laboratory analyses, and report writing, will be conducted in multiple independent phases.
- The IM and CMI SWMUs were assigned to assemblies according to the type of funds that will be used to remediate and monitor them. Investigation of SWMUs on the closing portion of the base are paid for with BRAC funds, while investigation of the remaining SWMUs are paid for with Environmental Restoration Navy Account (ERNA), formerly known as Defense Environmental Navy Account (DERA), funds.
- USEPA Region 4 guidance on preliminary risk evaluations (PREs) is used to evaluate risk at SWMUs where the BCT has deemed the use of PREs appropriate based on factors such as the complexity of the site, the potential for exposure, and the planned future land use.
- When applicable, SWMU-specific groundwater investigation results are combined to take a holistic or areawide approach to remediation of groundwater contamination. For example, one CMS/CMI was conducted for Northside fluvial deposits groundwater rather than one CMS/CMI for each Northside SWMU.
- Separate deliverables (e.g., work plans or reports) are prepared for each assembly. The *Comprehensive RFI Work Plan* (E/A&H, 1994) includes information (sampling procedures, analytical methods, etc.) applicable to all assemblies. Site-specific investigation plans were prepared for each SWMU on an assembly-by-assembly basis. These SIPs referenced the procedures, protocols, etc., described in the *Comprehensive RFI Work Plan*.

### 3.0 SOLID WASTE MANAGEMENT UNIT ASSEMBLIES

Eight SWMU assemblies (i.e., groups) had been defined for the NSA Mid-South RCRA Corrective Action Program. Four assemblies are BRAC-funded and four are ERNA-funded. SWMUs were assigned to assemblies based on the type of investigation required (RFI or CSI), the associated waste sources (surface or subsurface), and/or the type of field sampling methods involved (drilling, direct-push technology [DPT], hand-auger, etc.). Table 3-1, at the end of this section, summarizes the SWMU groupings and the type of investigation conducted for each assembly, and Appendix A lists each SWMU and its assembly, description, transfer status, environmental actions completed and pending, and recent document status and approval dates.

#### **BRAC Assemblies**

**Assembly A** was originally composed of six SWMUs (1, 3, 5, 7, 8, and 60) that required full RFI characterization because they had known or suspected releases. SWMUs 66 and 67 were added to Assembly A in the 1996 permit modification. SWMUs 3 and 7 (plating shop dry wells) were included because past subsurface disposal of concentrated plating wastes posed a threat to nearby Production Wells 1 and 2 (drinking water supply wells), SWMUs 8 and 60 because of the potential for a wide variety of buried wastes, and SWMUs 1 and 5 (surface burning of waste fuels and possibly solvents) because they had a potential for frequent releases to the environment. Geophysical surveys, DPT soil and groundwater sampling, hand-auger sampling, soil borings, and monitoring wells were used to characterize the Assembly A SWMUs.

The following recommendations/actions have been made/taken at the Assembly A SWMUs:

- |        |   |
|--------|---|
| SWMU 1 | A VCA soil pile removal was completed in 1996. NFA was recommended in the <i>SWMU 1 RFI Report, Rev. 1</i> (E/A&H, 1997) and was approved by the USEPA in March 1997.   |
| SWMU 3 | A VCA dry well removal was completed in 1996, and a VCA soil removal was completed in 2003. NFA was recommended in the <i>SWMU 3 Soil Sampling and Removal Report, Rev. 0</i> (EnSafe, 2004) and was approved by the TDEC in February 2004 and the USEPA in January 2004.   |
| SWMU 5 | A VCA removal of one fire mat and contaminated soil was conducted in 1997. Eight quarters of loess monitoring well sampling was conducted between 2000 and 2002. Based on these results, NFA was recommended for loess soil and groundwater in the <i>Technical Memorandum; Recommendation for Site Closure</i> ; |

*Aircraft Fire Fighting Training Facility — SWMU 5, Rev. 1* (EnSafe, 2003) which was approved by the TDEC in May 2003 and the USEPA in August 2003. Fluvial deposits groundwater is incorporated into AOC A. Restricting the property to industrial use only and restricting the use of loess groundwater at the site has been proposed in the SWMU 5 SB.

- SWMU 7      A VCA removal of the dry well was completed in 1996. NFA for soil and the incorporation of fluvial deposits groundwater into AOC A was recommended in the *RFI Report, AOC A Northside Fluvial Groundwater, Rev. 2* (EnSafe, 2000). Restricting the property to industrial use only and restricting the use of loess groundwater at the site has been proposed in the SWMU 7 SB.
- SWMU 8      A VCA removal of soil piles was completed in 1997. NFA was recommended in the *RFI Report, Assembly A — SWMU 8* (EnSafe, 1999) and approved by the TDEC in April 1999 and the USEPA in June 1999. Some LUCs are in place at the site.
- SWMU 60     A VCA removal of small areas of petroleum-contaminated soil was conducted in 1997. NFA was recommended in the *RFI Report, SWMU 60, Rev. 3* (EnSafe, 1999) and approved by the USEPA in June 1999. Some LUCs are in place at the site.
- SWMU 66     VCA debris removal as a nonhazardous site was completed in 1996. NFA was recommended in the *VCA Report, SWMU 66, Rev. 3* (EnSafe, 1998) and approved by the TDEC in April 1999 and the USEPA in October 1998.
- SWMU 67     VCA debris removal as a nonhazardous site was completed in 1996. NFA was recommended in the *VCA Report, SWMU 67, Rev. 2* (EnSafe, 1999).

**Assembly B** is made up of four RFI SWMUs (4, 6, 38 [Northside only], and 40) and two CSI SWMUs (10 and 31). The RFI SWMUs were characterized because they have had known or suspected releases. Verification sampling was conducted at the CSI SWMUs because they are on property that was excessed due to BRAC. SWMUs 4, 6, and 38 (Northside only) are ditches that required sediment sampling. SWMU 31 is an aircraft wash rack that discharged to a storm sewer leading to SWMU 6. The storm sewer inlet (at the wash rack) and outfall were sampled with the ditches. SWMU 10 is a landfill that was initially investigated by sampling the ditch (SWMU 38) along its western border to investigate whether contaminants have leached from the landfill. A geophysical survey, DPT soil and groundwater sampling, and hand-auger soil sampling were

conducted at SWMU 10 as a result of the initial sediment sampling. The *Assembly B RFI Report, Rev. 2* (E/A&H, 1997) recommended NFA for the ditches and was approved by the USEPA in March 1997. The *CSI Report, SWMU 10, Rev. 3* (EnSafe, 1998) recommended NFA for SWMU 10 which was approved by the USEPA in October 1998 and the TDEC in April 1999. Some LUCs are currently in place at SWMU 10.

SWMU 40 was a salvage yard where previous sampling indicated shallow (less than 3 feet) petroleum and metals contamination. Two abandoned underground storage tanks (USTs) associated with a service station formerly at SWMU 40 have been removed by a Navy UST contractor. Based on hand-auger and DPT soil and groundwater sampling results, the *Assembly B RFI Report, Rev. 1* (E/A&H, 1997) recommended NFA for SWMU 40 and was approved by the USEPA in March 1997.

**Assembly C** consists of six SWMUs (15, 18, 21, 26, 27, and 62) that required CSIs to confirm whether releases have occurred and, if so, whether RFI characterization is needed. Wastes at these SWMUs were stored or potentially released below ground surface, so DPT soil and groundwater sampling was used for their investigations. Full RFI characterization (i.e., soil borings and monitoring wells) was required for SWMUs 15 and 21. A VCA tank removal conducted at SWMU 18 indicated a release from the waste oil tank, thus an RFI to investigate potential groundwater contamination was required.

In March 1997, the USEPA approved NFA recommendations for SWMUs 26, 27, and 62 in the *Assembly C CSI Report, Rev. 3* (E/A&H, 1996). At SWMUs 18 and 21, NFA for soil and the incorporation of groundwater into AOC A was approved by the USEPA in April 1999 in the *RFI Report, SWMU 18, Rev. 1* (EnSafe, 1999) and the *RFI Report, Assembly C, SWMU 21, Rev. 2* (EnSafe, 1999). An RFI-IM petroleum-contaminated soil removal is currently being conducted at SWMU 15, and the BCT is anticipated to grant NFA upon completion of the removal action. Some LUCs will continue to exist at SWMUs 15, 18, and 21.

**Assembly D** includes 10 SWMUs (11, 16, 36, 42, 44, 50, 51, 52, 53, and 64) that required CSI sampling. Seven of these SWMUs are past or present hazardous waste accumulation points (HWAPs) or storage areas. The other three (11, 16, and 36) were previously NFA SWMUs that were investigated because of BRAC-related property disposal. Because the wastes at these SWMUs were stored or potentially released aboveground, hand-auger surface and subsurface soil sampling was conducted for the verification. A geophysical survey and DPT sampling were also conducted at SWMU 36 because a UST was associated with the site. The *Assembly D CSI Report, Rev. 2*

(E/A&H, 1996) recommended NFA for SWMUs 11, 36, 42, 50, 51, 52, 53, and 64 and was approved by the USEPA in March 1997. The *Technical Memorandum; VCA Report, SWMU 44, Rev. 0* (EnSafe 1998) recommended NFA for SWMU 44 and was approved by the TDEC in March 1999. Some LUCs currently exist for SWMU 64.

A separate CSI work plan was prepared to assess the extent of shallow soil contamination that was excavated concurrently with a VCA tank removal at SWMU 16 (two aboveground aviation gasoline and waste-oil storage tanks). In 1998, the tanks and contaminated soils at SWMU 16 were removed and confirmation samples indicated that remaining soils were below cleanup levels. NFA was recommended in the *CSI/VCA Report, SWMU 16, Rev. 1* (EnSafe, 1999) and was approved by the TDEC and USEPA in May 1999.

**AOC A** is collectively made up of 13 SWMUs and 2 sites (SWMUs 1, 3, 5, 7, 8, 10, 15, 18, 21, 27, 40, 60, and 62, the north fuel farm, and background location 5) on the NSA Mid-South Northside. AOC A was designated after the airport apron-area investigation was under way and numerous plumes within the fluvial deposits groundwater were identified. The BCT determined that a holistic approach to the fluvial deposits groundwater contamination would simplify and expedite the CMS process. Additionally, designating AOC A would address groundwater contamination that was not attributed to known sources or connected to a SWMU. Enhanced bioremediation and MNA were recommended in the *CMS Report, AOC A, Rev. 1* (EnSafe, 2003) and was approved by the TDEC in May 2003 and the USEPA in June 2004.

### ***ERNA Assemblies***

**Assembly E** is composed of the six SWMUs (2, 9, 14, 38 [Southside only], 59, and 65) on the non-closing portion of the base that required full RFI characterization. A wide variety of waste types and sources are represented in this assembly; thus, a full range of sampling techniques (drill rig and hand-auger borings, sediment sampling, monitoring wells, etc.) were required. DPT soil and groundwater sampling, hand-auger sampling, soil borings, and monitoring wells were used to characterize the Assembly E SWMUs.

The following recommendations/actions have been made/taken at the Assembly E SWMUs:

SWMU 2      An RFI and a CMS have been completed. The *CMS Report, SWMU 2, Rev. 1* (EnSafe, 2004) recommended MNA as the remedial alternative for chlorinated solvent-contaminated alluvial groundwater and was approved by the TDEC in August 2005 and USEPA in April 2004. SWMU 2 is currently being

monitored on an annual basis for volatile organic compounds (VOCs) and MNA parameters.

- SWMU 9      The *RFI Report, Assembly E, Rev. 2* (EnSafe, 2000) recommended NFA, which was approved by the TDEC in March 2001 and the USEPA in June 2001. An institutional control banning fishing has been proposed in the SWMU 9 SB.
- SWMU 14     An RFI and a CMS have been completed. The *CMS Report, SWMU 14, Rev. 1* (EnSafe, 2003) recommended enhanced bioremediation with MNA as the remedial alternative for chlorinated solvent-contaminated loess groundwater and was approved by the TDEC and USEPA in February 2004. Monthly nutrient injections and quarterly groundwater monitoring for VOCs and MNA parameters are currently being conducted.
- SWMU 38     The *RFI Report, Assembly B, Rev. 2* (EnSafe, 1997) recommended NFA, which was approved by the USEPA in March 1997.
- SWMU 59     A VCA building demolition/soil removal was completed at SWMU 59 in 1999. The Assembly E RFI Report recommended NFA, which was approved by the TDEC and USEPA.
- SWMU 65     A VCA petroleum-contaminated soil removal was completed in 2000. The Assembly E RFI Report recommended NFA, which was approved by the TDEC and USEPA.

**Assembly F** consists of seven SWMUs (17, 19, 20, 22, 30, 39, and 63) that required CSI sampling to verify whether releases have occurred. Underground tanks are the potential contaminant source for all of these SWMUs; thus, DPT soil and groundwater sampling were the primary investigative tool for determining if releases had occurred. SWMU 39 was formerly in Assembly H because the aboveground storage of polychlorinated biphenyl transformers there represented a potential for surface releases. It was moved to Assembly F when it was discovered that it was also the site of a former dry cleaning operation with an associated UST (both potential threats to groundwater). IM/VCA tank removals conducted at SWMUs 17 and 19 confirmed that releases had occurred from these tanks; thus, RFI characterization of potential groundwater contamination was required at each site. Additionally, based on BCT review of soil and groundwater screening results for SWMUs 20, 22, 39, and 63, RFIs were recommended. SWMU 30 was the only Assembly F SWMU

recommended in the *CSI Report, Assembly F, Rev. 2* (EnSafe, 1998) for NFA (approved by the USEPA in March 1999) following the CSI.

The following recommendations/actions have been made/taken at the Assembly F SWMUs since the CSIs:

- SWMU 17      A VCA petroleum-contaminated soil removal was completed in 2000. The *RFI Report, Assembly F, Rev. 1* (EnSafe, 2000) recommended NFA, which was approved by the TDEC in March 2001 and USEPA in April 2001. Because groundwater contains contaminants that would pose an excessive risk to future site residents who consume groundwater, an institutional control that restricts groundwater use at the site has been proposed in the SWMU 17 SB.
- SWMU 19      A VCA petroleum-contaminated soil removal was completed in 2003. NFA was recommended in the *Technical Memorandum — VCA Report, SWMU 19, Rev. 0* (EnSafe, 2003) and was approved by the TDEC and USEPA in February 2004. However, some LUCs currently exist for SWMU 19.
- SWMU 20      The Assembly F RFI Report recommended NFA, which was approved by the TDEC and USEPA; however, some LUCs currently exist for SWMU 20. An institutional control banning the use of the site's groundwater has been proposed in the SWMU 20 SB.
- SWMU 22      A VCA petroleum-contaminated soil removal was completed in 2001 at former UST location S-1245. NFA was recommended in the *VCA Report, SWMU 22, Rev. 0* (EnSafe, 2001) regarding the soils at former UST location S-1245 and approved by the TDEC in June 2001. The removal of petroleum contaminated soil at former UST location S-75W is still pending. Some LUCs will exist for SWMU 22 following the petroleum-contaminated soil removal at UST location S-75W.
- SWMU 39      An RFI and a CMS have been completed. The *CMS Report, SWMU 39, Rev. 2* (EnSafe, 2003) recommended enhanced bioremediation with MNA as the remedial alternative for chlorinated solvent-contaminated fluvial deposits groundwater. The TDEC and USEPA approved this recommendation in January 2004 and October 2003, respectively. Monthly nutrient injections and quarterly groundwater monitoring for VOCs and MNA parameters are currently being conducted.



SWMU 63     The Assembly F RFI Report recommended NFA, which was approved by the TDEC and USEPA.

**Assembly G** is made up of seven SWMUs (43, 45, 46, 47, 48, 49, and 61) requiring CSI sampling. SWMUs 43 through 49 are inactive HWAPs. An IM soil removal conducted at SWMU 45 to facilitate a BRAC-related construction project resulted in an NFA determination. These results were presented in the *Interim Measures Technical Memorandum; SWMU 45* (E/A&H, 1995), and NFA were approved by the TDEC in February 1996 and the USEPA in January 1996. SWMU 46 is within the area investigated during the SWMU 14 (Assembly E) RFI and should not require a separate investigation. SWMU 48 is in the immediate vicinity of SWMU 17 (Assembly F); thus, the potential groundwater contamination was assessed during the SWMU 17 investigation. Likewise, the potential groundwater contamination indicated by the findings of the IM tank removal at SWMU 19 was investigated during the CSI at SWMU 49 due to the SWMU's proximity to each other. SWMU 61 was a concrete pad outside a former print shop, which was removed during a VCA petroleum-contaminated soil removal in 1997.

During the CSI, DPT groundwater screening was used along with hand auger sampling to investigate SWMUs 48 and 17, SWMUs 49 and 19, and SWMU 47. Hand-auger sampling was proposed for verification sampling at the remaining Assembly G SWMUs because wastes were stored aboveground and any releases would have been to the surface. The CSIs for each of the SWMUs (minus SWMU 45) recommended an RFI.

The following recommendations/actions have been made/taken at the Assembly G SWMUs since the CSIs:

SWMU 43     A VCA petroleum-contaminated soil removal was completed in 2000. The *RFI Report, Assembly G & H, Rev. 1* (EnSafe, 2001) recommended NFA, which was approved by the TDEC in January 2003. An institutional control banning residential use of the property has been proposed in the SWMU 43 SB.

SWMU 46     Due to its proximity to SWMU 14, the BCT decided to incorporate SWMU 46's loess groundwater contamination into SWMU 14's (Assembly E) investigation. An institutional control banning the use of the site's groundwater and banning residential reuse of the property has been proposed in the SWMU 46 SB.

- SWMUs 47 and 48      VCA petroleum-contaminated soil removals were completed in 2000. The *VCA Report, Petroleum-Contaminated Soil, Rev. 1* (EnSafe, 2001) recommended NFA, which was approved by the TDEC in August 2001.
- SWMU 49              A VCA petroleum-contaminated soil removal was completed in 2003. The *Technical Memorandum – VCA Report, SWMU 19, Revision 0* (EnSafe, 2003) recommended NFA, which was approved by the TDEC and the USEPA in February 2004. Some LUCs currently exist for SWMU 49.
- SWMU 61              Following the VCA removal in 1997, the *CSI Report, Assemblies G & H, Rev. 2* (EnSafe, 2000) recommended NFA, which was approved by the TDEC and the USEPA in June 2000.

**Assembly H** includes three SWMUs (23, 24, and 41) in active operational areas. SWMUs 24 and 41 are associated with wastes stored aboveground. Hand-auger sampling and DPT soil and groundwater sampling were conducted during the CSI investigation at SWMU 41, while hand-auger sampling was conducted for verification sampling at SWMU 24. The waste source at SWMU 23 was a UST that was reportedly removed in 1992 under the Navy UST Program; however, the removal report indicated the tank could not be located. A geophysical survey performed at this site did not indicate the presence of a tank. Because of the potential subsurface source, DPT soil and groundwater sampling was conducted at this site. Because Assembly H has only three SWMUs, document preparation and fieldwork for this assembly was combined with Assembly G for efficiency.

The following recommendations/actions have been made/taken at the Assembly H SWMUs since the CSIs:

- SWMU 23              The *CSI Report, Assembly G & H, Rev. 2* (EnSafe, 2000) recommended NFA, which was approved by the TDEC in May 2000 and USEPA in June 2000.
- SWMU 24              An RFI and VCA petroleum-contaminated soil removal was conducted at SWMU 24. The *VCA Report, Petroleum-Contaminated Soil, Rev. 1* (EnSafe, 2001) recommended NFA, which was approved by the TDEC in August 2001.

SWMU 41 A VCA petroleum-contaminated soil removal was conducted at SWMU 41 in 2000. The VCA Report recommended NFA for soil, which was approved by the TDEC in 2001. An RFI was conducted at SWMU 41 that included the installation of four alluvial groundwater monitoring wells. The *RFI Report, Assemblies G & H, Rev. 1* (EnSafe, 2001) recommended annual groundwater monitoring for volatile organic hydrocarbons (VOC). The SWMU 41 monitoring wells were sampled for VOCs in 2004. These results were presented in the *Technical Memorandum — Recommendation for No Further Action, SWMU 41* (EnSafe, 2005). NFA was approved by the TDEC in June 2005. An institutional control banning the use of the site's groundwater has been proposed in the SWMU 41 SB.

**Table 3-1**  
**Solid Waste Management Unit Assemblies**

<b>BRAC Assemblies</b>	
<b>Assembly A</b>	RFI SWMUs; wide variety of buried or subsurface wastes; some surface releases; geophysical surveys, DPT soil and groundwater sampling, hand-augers, drill rig borings, monitoring wells.
SWMU 1	Fire Department Drill Area
SWMU 3	Building N-121 Plating Shop Dry Well
SWMU 5	Aircraft Fire Fighting Training Area
SWMU 7	Building N-126 Plating Shop Dry Well
SWMU 8	Cemetery Disposal Area
SWMU 60	Northside Landfill (Western Portion)
SWMU 66	Radar Area Dump
SWMU 67	Horse Pasture Dump
<b>Assembly B</b>	RFI/CSI SWMUs; ditches and/or surface releases; geophysical surveys, sediment sampling, hand-augers, and DPT soil and groundwater sampling.
SWMU 4	Building N-121 Plating Shop Storm Sewer and Drainage Ditch
SWMU 6	Building N-126 Plating Shop Storm Sewer and Ditch
SWMU 10	Northside Landfill (Eastern Portion)
SWMU 31	Aircraft Wash Rack at 4th Street
SWMU 38	Miscellaneous Drainage Ditches (Northside of Navy Road)
SWMU 40	Salvage Yard No. 1
<b>Assembly C</b>	CSI/RFI SWMUs; primarily subsurface releases; hand-auger sampling and DPT soil and groundwater sampling.
SWMU 15	N-94 Underground Tank Farm
SWMU 18	N-112 Underground Waste Tank
SWMU 21	N-10 Underground Waste Tank
SWMU 26	N-102 Battery Acid Neutralization Unit
SWMU 27	Northside Sewage Treatment Plant
SWMU 62	M-21 Arresting Gear Drainage Area

**Table 3-1**  
**Solid Waste Management Unit Assemblies**

<b>Assembly D</b>	CSI SWMUs; primarily HWAPs or storage areas; wastes stored or released aboveground; primarily hand-auger sampling.
SWMU 11	Oiled Dirt Roads
SWMU 16	N-94 Aboveground Waste Tanks
SWMU 36	Northside Sewage Treatment Plant Incinerator
SWMU 42	N-12 Interim Hazardous Waste Storage Area
SWMU 44	Hazardous Waste Accumulation Point at Building N-102
SWMU 50	Hazardous Waste Accumulation Point at Building N-126, MAG-42
SWMU 51	Hazardous Waste Accumulation Point at Building N-126, VR-60
SWMU 52	Hazardous Waste Accumulation Point at Building N-126, VP-67
SWMU 53	Hazardous Waste Accumulation Point at Building N-126, AIMD
SWMU 64	Materials Storage Area-16
<b>AOC</b>	Collection of Northside SWMUs and miscellaneous areas; chlorinated solvent contamination in the fluvial deposits groundwater; primarily monitoring well sampling.
AOC A	Northside Fluvial Deposits Groundwater
<b>ERNA Assemblies</b>	
<b>Assembly E</b>	RFI SWMUs; geophysical surveys, DPT soil and groundwater sampling, hand-augers, sediment and surface water sampling, fish tissue sampling, drill rig borings, and monitoring wells.
SWMU 2	Southside Landfill
SWMU 9	Sewage Lagoons
SWMU 14	Former Building S-140 Site and 7th Avenue Ditch
SWMU 38	Miscellaneous Drainage Ditches (South of Navy Road)
SWMU 59	Pesticide Storage Facility (Old Pesticide Shop)
SWMU 65	Building S-362 (Training Mockup Site)
<b>Assembly F</b>	CSI/RFI SWMUs; buried tanks or potential for groundwater contamination; DPT soil and groundwater sampling and hand-augers.
SWMU 17	S-9 Underground Waste Tank
SWMU 19	N-757 Underground Waste Tank (formerly 341 and 1648 UWT).
SWMU 20	1594 Underground Waste Tank
SWMU 22	S-75 Underground Fuels Tanks
SWMU 30	Park Field Waste Treatment Tank
SWMU 39	S-74 PCB Storage Area
SWMU 63	Underground Waste Tank S-75N
<b>Assembly G</b>	CSI SWMUs; wastes stored aboveground; inactive operational areas; hand-auger sampling.
SWMU 43	Hazardous Waste Accumulation Point at Building S-176
SWMU 45	Hazardous Waste Accumulation Point at Building S-142
SWMU 46	Hazardous Waste Accumulation Point at Building S-140 (investigated as part of SWMU 14)
SWMU 47	Hazardous Waste Accumulation Point at Building S-344
SWMU 48	Hazardous Waste Accumulation Point at Building S-9
SWMU 49	Hazardous Waste Accumulation Point at Building N-757
SWMU 61	N-26 (Former Printing Shop)

**Table 3-1**  
**Solid Waste Management Unit Assemblies**

<b>Assembly H</b>	CSI SWMUs; wastes primarily stored aboveground; active operational areas; hand-auger sampling; geophysical survey at SWMU 23; DPT soil and groundwater sampling at SWMU 23 and possibly at SWMUs 24 and 41; will combine work plans, fieldwork, and reports with Assembly G due to small number of SWMUs in this assembly.
SWMU 23	S-8 Underground Fuel Tank
SWMU 24	N-114 Auto Hobby Shop Waste Oil Tanks
SWMU 41	Salvage Yard No. 2

#### **4.0 SUMMARY OF CORRECTIVE ACTION MANAGEMENT STRATEGY**

Five SWMUs and one AOC are currently undergoing a corrective action or IM under the RCRA Corrective Action Program at NSA Mid-South. The remaining SWMUs have either received NFA or are under LUCs. The general tasks and sequences anticipated or implemented for each phase of the program are discussed below.

##### **Corrective Action or Interim Measures SWMUs**

###### ***SWMU 2***

Following a CMS, the BCT concluded that MNA was the best potential remedy for chlorinated solvent contaminated groundwater beneath the site. The *MNA Work Plan, SWMU 2 — Southside Landfill* (EnSafe 2005) details the remedial technology implementation strategy. The work plan requires annual groundwater VOC and MNA monitoring and annual VOC monitoring within the Big Creek Drainage Canal. The results of the annual investigations are to be presented and evaluated in annual progress reports to be delivered to the BCT. The 2005 annual monitoring was conducted in September 2005 and the *Monitored Natural Attenuation Effectiveness Report — SWMU 2* (EnSafe, 2005) was submitted to the BCT in December 2005.

###### ***SWMU 14***

SWMU 14 is currently undergoing interim measures, which were the recommendation of the CMS report that was approved by the BCT. The CMS report recommended full-scale enhanced bioremediation with MNA as the remedy. The *Interim Measures Work Plan, SWMU 14/46* (EnSafe, 2004) details the remedial technology implementation strategy. The work plan requires monthly substrate injections and quarterly groundwater VOC and MNA monitoring. The results of the quarterly monitoring events are to be presented and evaluated in biannual progress reports to be delivered to the BCT.

Injection and additional monitoring wells were installed in January 2005. Following a baseline sampling event the same month, monthly substrate injections commenced in February 2005. These injections have been conducted on a monthly basis through the production of this CAMP. Additionally, quarterly groundwater monitoring for VOCs and MNA parameters has been conducted. The *Interim Measures Progress Report, NSA Mid-South, SWMU 14* (EnSafe, 2005) details and evaluates the interim measures and groundwater sampling performed at SWMU 14.

###### ***SWMU 15***

SWMU 15 is currently undergoing an RFI IM petroleum-contaminated soil removal. Approximately 57,000 and 3,000 tons of petroleum-contaminated soil was removed in 2003

and 2005, respectively, from the area of and adjacent to the former N-94 tank farm. The submission of a final excavation report from the Navy's remedial action contractor, Solutions to Environmental Problems (STEP), Inc., is anticipated in December 2005. The report will detail the excavation process, present final confirmation soil sampling results for the excavation walls and bottom, and will request site closure.

### ***SWMU 22***

SWMU 22 is currently undergoing an RFI IM petroleum-contaminated soil removal. NSA Mid-South procured a demolition/excavation contractor to conduct a contaminated-soil excavation concurrently with the building S-75 demolition. The BCT is currently awaiting results of the removal action.

### ***SWMU 39***

SWMU 39 is currently undergoing interim measures, which were the recommendation of the CMS report that was approved by the BCT. The CMS report recommended full-scale enhanced bioremediation with MNA as the remedy. The *Interim Measures Work Plan, SWMU 39* (EnSafe, 2004) details the remedial technology implementation strategy. The work plan requires monthly substrate injections and quarterly groundwater VOC and MNA monitoring. The results of the quarterly monitoring events are to be presented and evaluated in biannual progress reports to be delivered to the BCT.

Injection and additional monitoring wells were installed in January 2005. Following a baseline sampling event the same month, monthly substrate injections commenced in February 2005. These injections have been conducted on a monthly basis through the production of this CAMP. Additionally, quarterly groundwater monitoring for VOCs and MNA parameters has been conducted. The *Interim Measures Progress Report, NSA Mid-South, SWMU 39* (EnSafe, 2005) details and evaluates the interim measures and groundwater sampling conducted at SWMU 39.

### ***AOC A***

AOC A is currently undergoing interim measures, which were the recommendation of the CMS report that was approved by the TDEC in 2003 and the USEPA in 2004. The CMS report recommended full-scale enhanced bioremediation with MNA as the remedy. The *Interim Measures Work Plan, AOC A — Northside Fluvial Deposits Groundwater* (EnSafe, 2003) details the remedial technology implementation strategy. The work plan requires monthly substrate injections and quarterly groundwater VOC and MNA monitoring.

To support the IM, additional injection and monitoring wells were installed in April 2004. In May 2004, a baseline sampling event was conducted, and the commencement of monthly nutrient injections into 12 injection wells began. In May 2005, eight pre-existing injection/monitoring wells were included with the 12 ongoing wells for injection. The injections have been conducted on a monthly basis through the production of this CAMP.

Quarterly groundwater monitoring has been conducted since May 2004. During quarterly sampling 22 monitoring wells within or adjacent to the four contaminant sub-plumes are sampled for VOCs and various MNA parameters; eight wells are sampled for VOCs only. On an annual basis, 68 wells are sampled for VOCs and various MNA parameters and 27 wells are sampled for VOCs only during the comprehensive, Northside, long-term monitoring events. In March 2005, EnSafe submitted to the BCT the *Interim Measures Progress Report, AOC A — Northside Fluvial Deposits Groundwater, NSA Mid-South, Rev. 0* (EnSafe, 2005), which detailed and evaluated the interim measures and groundwater sampling conducted at AOC A through February 2005. In December 2005, EnSafe submitted to the BCT the *Interim Measures Developmental Report, AOC A — Northside Fluvial Deposits Groundwater, NSA Mid-South, Rev. 0* (EnSafe, 2005) which further detailed and evaluated the interim measures and groundwater sampling conducted to date at AOC A and the continuation of monthly injections and requested that the sampling frequency be changed from a quarterly to a biannual basis.

## **NFA or LUC SWMUs**

### ***LUC SWMUs***

Fifteen SWMUs currently or are proposed to contain one or more LUCs. Nine of these SWMUs are on property that has been transferred to the City of Millington (BRAC) and six SWMUs remain on Navy property (ERNA). These SWMUs require periodic inspections in accordance with the Land-Use Control Implementation Plans (LUCIP) to assure that the land-use restrictions are being followed. Periodic LUC compliance inspection requirements for SWMUs on Navy properties will be incorporated into NSA Mid-South's regional shore infrastructure plan (RSIP) and inspection requirements for transferred properties are presented in the deed documents. Table 1-1 lists each of the LUC SWMUs with a designation of either transferred (BRAC) or retained (ERNA).

### ***NFA SWMUs***

Forty-seven SWMUs have received or are proposed for NFA. These SWMUs require no further investigation at this time and do not have LUCs. Table 1-1 lists the SWMUs that require NFA.



## **5.0 PRIORITY AND SCHEDULE**

The CSIs and RFIs have been completed at all existing NSA Mid-South SWMUs. Each SWMU has undergone corrective or interim measures, received/requests NFA approval, or requires/requests no additional action except for LUCs. Therefore, prioritizing work between BRAC and ERNA SWMUs is not an issue for this version of the CAMP. The implementation schedules for each of the SWMUs undergoing corrective or interim measures is detailed in their respective corrective/interim measures work plans and are outlined in Section 4.0 of this document. LUCIPs will be incorporated into the deed documents for BRAC SWMUs and into the RSIP for ERNA SWMUs.

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**Appendix A**  
**Status of SWMUs and AOCs**

**Solid Waste Management Units  
December 2005**

<b>SWMU #</b>	<b>Assembly</b>	<b>Description</b>	<b>Actions Completed</b>	<b>Actions Pending</b>	<b>Funding</b>	<b>Status</b>
1	A	Fire Department Drill Area	RFI	None	BRAC	NFA was recommended in the SWMU 1 RFI Report, Rev.1 (EnSafe/A&H, Sept. 18, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
2	E	Southside Landfill	RFI/CMS	CMI	ERNA	MNA was recommended in the SWMU 2 CMS Report, Rev.1 (EnSafe, February 27, 2004). Approval letters: TDEC — 8/31/05; USEPA — 4/27/04
3	A	Building N-121 Plating Shop Dry Well	RFI/IM	None	ERNA	NFA was recommended in the SWMU 3 Soil Sampling and Removal Report (EnSafe, January 7, 2004). Approval letters: TDEC — 2/13/04; USEPA — 1/15/04
4	B	Building N-121 Plating Shop Storm Sewer and Drainage Ditch	RFI	None	BRAC	NFA was recommended in the Assembly B RFI Report, Rev.2 (EnSafe/A&H, January 1, 1997). Approval letters: TDEC — N/A; USEPA — 3/17/97
5	A	Aircraft Firefighting Training Area	RFI/IM	None	BRAC	NFA was recommended in the Tech. Memo.; Recommendation for Site Closure; Aircraft Fire Fighting Training Facility-SWMU 5, Rev. 1 (EnSafe, May 2, 2003). Approval letters: TDEC — 5/8/03; USEPA — 8/30/03
6	B	Building N-126 Battery Shop Storm Sewer and Ditch	RFI	None	BRAC	NFA was recommended in the Assembly B RFI Report, Rev.2 (EnSafe/A&H, January 1, 1997). Approval letters: TDEC — N/A; USEPA — 3/17/97
7	A	Building N-126 Plating Shop Dry Well	RFI	None	BRAC	NFA for soil and addressing groundwater with AOC A was recommended in the AOC A RFI Report, Rev.2 (EnSafe, February 17, 2000). Approval letters: TDEC — N/A; USEPA — N/A
8	A	Cemetery Disposal Area	RFI/IM	None	BRAC	NFA was recommended in the Assembly A — SWMU 8 RFI Report, Rev.2 (EnSafe, May 28, 1999). Approval letters: TDEC — 4/30/99; USEPA — 6/03/99
9	E	Sewage Lagoons	RFI	None	ERNA	NFA with a ban on fishing was recommended in the Assembly E RFI Report, Rev.2 (EnSafe, Oct. 6, 2000). Approval letters: TDEC — 3/16/01; USEPA — 6/27/01
10	B	Northside Landfill (Eastern Portion)	RFI	None	BRAC	NFA was recommended in the SWMU 10 CSI Report, Rev.3 (EnSafe, Sept. 11, 1998). Approval letters: TDEC — 4/30/99; USEPA — 10/23/98
11	D	Oiled Dirt Roads	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
12	N/A	Galley Disposal	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGe, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90

**Solid Waste Management Units  
December 2005**

<b>SWMU #</b>	<b>Assembly</b>	<b>Description</b>	<b>Actions Completed</b>	<b>Actions Pending</b>	<b>Funding</b>	<b>Status</b>
13	N/A	Building 499 Grease Pit	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
14	E	Building S-140 Site and Seventh Avenue Ditch	RFI/CMS	CMI	ERNA	Enhanced Bio. and MNA were recommended in the SWMU 14/46 CMS Rpt, Rev.1 (EnSafe, Dec. 22, 2003). Approval letters: TDEC — 2/18/04; USEPA — 2/10/04
15	C	N-94 Underground Tank Farm	RFI/IM	None	BRAC	The Assembly C RFI Report, Vol. I — SWMU 15, Rev.2 (EnSafe, April 24, 1998) recommended addressing fluvial deposits groundwater contamination with AOC A. Loess soil and groundwater contamination at SWMU 15 is being addressed in an ongoing IM. Approval letters: TDEC — 4/30/99; USEPA — N/A
16	D	N-94 Above-Ground Waste Tanks	RFI/IM	None	BRAC	NFA was recommended in the SWMU 16 CSI/VCA Report, Rev.1 (EnSafe, March 2, 1999). Approval letters: TDEC — 5/10/99; USEPA — 5/3/99
17	F	S-9 Underground Waste Tank	IM/RFI	None	ERNA	NFA was recommended in the Assembly F RFI Report, Rev.1 (EnSafe, September 15, 2000). Approval letters: TDEC — 3/07/01; USEPA — 4/03/01
18	C	N-112 Underground Waste Tank	RFI	None	BRAC	NFA for soil and addressing groundwater with AOC A was recommended in the SWMU 18 RFI Report, Rev.1 (EnSafe, October 8, 1998). Approval letters: TDEC — 4/30/99; USEPA — N/A
19	F	N-757 Underground Waste Tank (formerly 341 and 1648 UST)	RFI/IM	None	ERNA	NFA was recommended in the Tech. Memo. — SWMU 19 VCA Report, Rev.0 (EnSafe, Oct. 20, 2003). Approval letters: TDEC — 2/12/04; USEPA — 2/09/04.
20	F	1594 Underground Waste Tank	RFI	None	ERNA	NFA was recommended in the Assembly F RFI Report, Rev.1 (EnSafe, September 15, 2000). Approval letters: TDEC — 3/07/01; USEPA — 4/03/01
21	C	N-10 Underground Waste Tank	RFI	None	BRAC	NFA for soil and addressing groundwater with AOC A was recommended in the Assembly C RFI Report, Vol. II — SWMU 21, Rev.2 (EnSafe, April 24, 1998). Approval letters: TDEC — 4/30/99; USEPA — N/A
22	F	S-75 Underground Fuel Tanks	RFI/IM	None	ERNA	NFA was recommended in the SWMU 22 VCA Report, Rev.0 (EnSafe, March 19, 2001) for former UST S-1245. Soil contamination for former UST S-75W is currently being addressed in a VCA. Approval letters: TDEC — 6/25/01; USEPA — N/A
23	H	S-8 Underground Fuel Tank	RFI	None	ERNA	NFA was recommended in the Assemblies G & H CSI Report, Rev.2 (EnSafe, April 28, 2000). Approval letters: TDEC — 5/19/00; USEPA — 6/08/00



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<b>SWMU #</b>	<b>Assembly</b>	<b>Description</b>	<b>Actions Completed</b>	<b>Actions Pending</b>	<b>Funding</b>	<b>Status</b>
24	H	N-114 Auto Hobby Shop Waste Oil Tanks	RFI/IM	None	ERNA	NFA was recommended in the Petroleum — Cont. Soil VCA Report, Rev.1 (EnSafe, June 29, 2001). Approval letters: TDEC — 8/24/01; USEPA — N/A
25	N/A	Big Creek Landfill	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
26	C	N-102 Battery Acid Treatment (Underground Tank Only)	RFI	None	BRAC	NFA was recommended in the Assembly C CSI Report, Rev.3 (EnSafe/A&H, Dec. 16, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
27	C	Northside Sewage Treatment Plant	RFI	None	BRAC	NFA was recommended in the Assembly C CSI Report, Rev.3 (EnSafe/A&H, Dec. 16, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
28	N/A	Southside Sewage Treatment Plant	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
29	N/A	Lakehouse Sewage Treatment Plant	N/A	None	BRAC	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
30	F	Park Field Waste Treatment Tank	RFI	None	ERNA	NFA was recommended in the Assembly F CSI Report, Rev.2 (EnSafe, July 31, 1998). Approval letters: TDEC — N/A; USEPA — 3/15/99
31	B	Aircraft Wash Rack at Fourth Street	RFI	None	BRAC	NFA was recommended in the Assembly B RFI Report, Rev.2 (EnSafe/A&H, January 1, 1997). Approval letters: TDEC — N/A; USEPA — 3/17/97
32	N/A	N-7 Aircraft Wash Rack	N/A	None	BRAC	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
33	N/A	H-10 Incinerator	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
34	N/A	H-109 Incinerator	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
35	N/A	1579 Incinerator	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
36	D	Northside Sewage Treatment Plant Incinerator	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97

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<b>SWMU #</b>	<b>Assembly</b>	<b>Description</b>	<b>Actions Completed</b>	<b>Actions Pending</b>	<b>Funding</b>	<b>Status</b>
37	N/A	Southside Sewage Treatment Plant Incinerator	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
38	B	Miscellaneous Drainage Ditches	RFI	None	BRAC	NFA was recommended in the Assembly B RFI Report, Rev.2 (EnSafe/A&H, January 1, 1997). Approval letters: TDEC — N/A; USEPA — 3/17/97
39	E	S-74 BCB Storage Area	RFI/CMS	CMI	ERNA	Enhanced Bio. and MNA were recommended in the SWMU 39 CMS Report, Rev.2 (EnSafe, Sept. 26, 2003). Approval letters: TDEC — 1/26/04; USEPA — 10/14/03
40	B	Salvage Yard No. 1	RFI	None	BRAC	NFA was recommended in the Assembly B RFI Report, Rev.1 (E/A&H, Oct. 7, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
41	H	Salvage Yard No. 2	RFI	None	ERNA	NFA was recommended in the Tech. Memo – Recommendation for No Further Action, SWMU 41 (EnSafe, March 23, 2005) Approval letters: TDEC — 6/21/05; USEPA — N/A
42	D	N-12 Interim Hazardous Waste Storage Area	RFI	None	ERNA	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
43	G	Hazardous Waste Accumulation Point at Building S-176	RFI	None	ERNA	NFA was recommended in the Assemblies G & H RFI Report, Rev.1 (EnSafe, November 2001). Approval letters: TDEC — 1/10/03; USEPA — N/A
44	D	Hazardous Waste Accumulation Point at Building N-102	RFI/IM	None	BRAC	NFA was recommended in the Tech. Memo. SWMU 44 VCA Report, Rev.0 (EnSafe, July 2, 1998). Approval letters: TDEC — Email 3/8/99; USEPA — N/A
45	G	Hazardous Waste Accumulation Point at Building S-142	IM	None	ERNA	NFA was recommended in the SWMU 45 Interim Measures Tech. Memo. (EnSafe/A&H, Aug. 23, 1995). Approval letters: TDEC — 2/23/96; USEPA — 1/19/96
46	G	Hazardous Waste Accumulation Point at Building S-140	RFI/CMS	CMI	ERNA	Enhanced Bio. and MNA were recommended in the SWMU 14/46 CMS Rpt., Rev.1 (EnSafe, Dec. 22, 2003). Approval letters: TDEC — 2/18/04; USEPA — 2/10/04
47	G	Hazardous Waste Accumulation Point at Building 344	RFI/IM	None	ERNA	NFA was recommended in the Petroleum – Cont. Soil VCA Report, Rev.1 (EnSafe, June 29, 2001). Approval letters: TDEC — 8/24/01; USEPA — N/A
48	G	Hazardous Waste Accumulation Point at Building S-9	RFI/IM	None	ERNA	NFA was recommended in the Petroleum – Cont. Soil VCA Report, Rev.1 (EnSafe, June 29, 2001). Approval letters: TDEC — 8/24/01; USEPA — N/A
49	G	Hazardous Waste Accumulation Point at Building N-757	RFI/IM	None	ERNA	NFA was recommended in Technical Memorandum — SWMU 19 VCA Report, Rev.0 (EnSafe, Oct. 20, 2003). Approval letters: TDEC — 2/12/04; USEPA — 2/09/04

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50	D	Hazardous Waste Accumulation Point at Building N-126, MAG-42	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
51	D	Hazardous Waste Accumulation Point at Building N-126, VR-60	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
52	D	Hazardous Waste Accumulation Point at Building N-126, VP-67	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
53	D	Hazardous Waste Accumulation Point at Building N-126, AIMD	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
54	N/A	Hazardous Waste Accumulation Point at Dental Clinic	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
55	N/A	Hazardous Waste Accumulation Point at Medical Clinic	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
56	N/A	Hazardous Waste Accumulation Point at Building 352	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
57	N/A	Hazardous Waste Accumulation Point at Building S-183	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
58	N/A	Hazardous Waste Accumulation Point at Building S-360	N/A	None	ERNA	NFA was recommended in the RCRA Facility Assessment Report, (ERC/EDGE, August 1990). Approval letters: TDEC — N/A; USEPA — 2/22/90
59	E	Pesticide Storage Facility (Old Pesticide Shop)	IM/RFI	None	ERNA	NFA was recommended in the Assembly E RFI Report, Rev.2 (EnSafe, Oct. 6, 2000). Approval letters: TDEC — 3/16/01; USEPA — 6/27/01
60	A	Northside Landfill (Western Portion)	IM/RFI	None	BRAC	NFA was recommended in the SWMU 60 RFI Report, Rev.3 (EnSafe, May 28, 1999). Approval letters: TDEC — N/A; USEPA — 6/02/99
61	G	Building N-26 (Former Printing Shop)	IM/RFI	None	ERNA	NFA was recommended in the Assemblies G & H CSI Report, Rev.2 (EnSafe, April 28, 2000). Approval letters: TDEC — 5/19/00; USEPA — 6/08/00
62	C	M-21 Arresting Gear Drainage Area	RFI	None	BRAC	NFA was recommended in the Assembly C CSI Report, Rev.3 (EnSafe/A&H, Dec. 16, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97

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63	F	Underground Waste Tank S-75N	RFI	None	ERNA	NFA was recommended in the Assembly F RFI Report, Rev.1 (EnSafe, September 15, 2000). Approval letters: TDEC — 3/07/01; USEPA — 4/03/01
64	D	Materials Storage Area N-16	RFI	None	BRAC	NFA was recommended in the Assembly D CSI Report, Rev.2 (EnSafe/A&H, October 17, 1996). Approval letters: TDEC — N/A; USEPA — 3/17/97
65	E	Building S-362 (Training Mockup Site)	RFI/IM	None	ERNA	NFA was recommended in the Assembly E RFI Report, Rev.2 (EnSafe, Oct. 6, 2000). Approval letters: TDEC — 3/16/01; USEPA — 6/27/01
66	A	Radar Facility Dump	RFI/IM	None	BRAC	NFA was recommended in the SWMU 66 VCA Report, Rev.3 (EnSafe, Aug. 14, 1998). Approval letters: TDEC — 4/30/99; USEPA — 10/23/98
67	A	Horse Pasture Dump	RFI/IM	None	BRAC	NFA was recommended in the SWMU 67 VCA Report, Rev.2 (EnSafe, May 12, 1999). Approval letters: TDEC — N/A; USEPA — N/A
AOC A	N/A	Northside Fluvial Deposits Groundwater	RFI/CMS	IM/CMI	BRAC	Enhanced Bio. and MNA were recommended in the AOC A CMS Report, Rev.1 (EnSafe, April 18, 2003). Approval letters: TDEC — 5/28/03; USEPA — 6/16/04

**Notes:**

AOC	—	Area of Concern
A&H	—	Allen and Hoshall
BRAC	—	Base Realignment and Closure
CMI	—	Corrective Measures Implementation
CMS	—	Corrective Measures Study
CSI	—	Confirmatory Sampling Investigation
ERC/EDGE	—	ERC Environmental and Energy Services Company/Engineering, Design, and Geosciences Group, Inc.
ERNA	—	Environmental Restoration Navy Account
GW	—	Groundwater
IM	—	Interim Measures
N/A	—	Not Applicable
NFA	—	No Further Action
SB	—	Statement of Basis
SWMU	—	Solid Waste Management Unit
Tech. Memo.	—	Technical Memorandum
TDEC	—	Tennessee Department of Environment and Conservation
USEPA	—	United States Environmental Protection Agency
VCA	—	Voluntary Corrective Action